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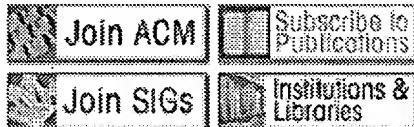
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1 Client-server computing in mobile environments   ■
Jin Jing, Abdelsalam Sumi Helal, Ahmed Elmagarmid
June 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 2

Full text available: 📄 pdf(233.31 KB)   Additional Information: full citation, abstract, references, citings, index terms, review

Recent advances in wireless data networking and portable information appliances have engendered a new paradigm of computing, called mobile computing, in which users carrying portable devices have access to data and information services regardless of their physical location or movement behavior. In the meantime, research addressing information access in mobile environments has proliferated. In this survey, we provide a concrete framework and categorization of the various way ...

Keywords: application adaptation, cache invalidation, caching, client/server, data dissemination, disconnected operation, mobile applications, mobile client/server, mobile compuing, mobile data, mobility awareness, survey, system application

2 Better operating system features for faster network servers   ■
Gaurav Bangs, Peter Druschel, Jeffrey C. Mogul
December 1998 **ACM SIGMETRICS Performance Evaluation Review**, Volume 26 Issue 3

Full text available: 📄 pdf(911.11 KB)   Additional Information: full citation, abstract, citings, index terms

Widely-used operating systems provide inadequate support for large-scale Internet server applications. Their algorithms and interfaces fail to efficiently support either event-driven or multi-threaded servers. They provide poor control over the scheduling and management of machine resources, making it difficult to provide robust and controlled service. We propose new UNIX interfaces to improve scalability, and to provide fine-grained scheduling and resource management.

3 Fast and flexible application-level networking on exokernel systems   ■
Gregory R. Ganger, Dawson R. Engler, M. Frans Kaashoek, Héctor M. Briceño, Russell Hunt, Thomas Pinckney
February 2002 **ACM Transactions on Computer Systems (TOCS)**, Volume 20 Issue 1

Full text available: 📄 pdf(500.67 KB)   Additional Information: full citation, abstract, references, citings, index terms

Application-level networking is a promising software organization for improving performance and functionality for important network services. The Xok/ExOS exokernel system includes application-level support for standard network services, while at the same time allowing application writers to specialize networking services. This paper describes how Xok/ExOS's kernel mechanisms and library operating system organization achieve this flexibility, and retrospectively shares our experiences an ...

Keywords: Extensible systems, OS structure, fast servers, network services

4 Efficient user-space protocol implementations with QoS guarantees using real-time upcalls
R. Gopalakrishnan, Gurudatta M. Parulkar
August 1998 **IEEE/ACM Transactions on Networking (TON)**, Volume 6 Issue 4
Full text available: pdf(205.42 KB)   Additional Information: full citation, references, citings, index terms

Keywords: multimedia communication, networks, operating system kernals, processor scheduling, protocols, real-time systems, transport protocols

5 Column: A case for context-aware TCP/IP
Carey Williamson, Qian Wu
March 2002 **ACM SIGMETRICS Performance Evaluation Review**, Volume 29 Issue 4
Full text available: pdf(1.55 MB)   Additional Information: full citation, abstract, references

This paper discusses the design and evaluation of CATNIP, a Context-Aware Transport/Network Internet Protocol for the Web. This integrated protocol uses application-layer knowledge (i.e., Web document size) to provide explicit context information to the TCP and IP protocols. While this approach violates the traditional layered Internet protocol architecture, it enables informed decision-making, both at network endpoints and at network touters, regarding flow control, congestion control, and pack ...

Keywords: TCP/IP, internet protocols, network emulation, network simulation, web performance

6 Fast detection of communication patterns in distributed executions
Thomas Kunz, Michiel F. H. Seuren
November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research**
Full text available: pdf(4.21 MB)   Additional Information: full citation, abstract, references, index terms

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

7 The state of the art in locally distributed Web-server systems
Valeria Cardellini, Emiliano Casalicchio, Michele Colajanni, Philip S. Yu
June 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 2
Full text available: pdf(1.41 MB)   Additional Information: full citation, abstract, references, citings, index terms

The overall increase in traffic on the World Wide Web is augmenting user-perceived response times from popular Web sites, especially in conjunction with special events. System platforms that do not replicate information content cannot provide the needed scalability to handle large traffic volumes and to match rapid and dramatic changes in the number of clients. The need to improve the performance of Web-based services has produced a variety of novel content delivery architectures. This article w ...

Keywords: Client/server, World Wide Web, cluster-based architectures, dispatching algorithms, distributed systems, load balancing, routing mechanisms

8 The transport layer: tutorial and survey
Sami Iren, Paul D. Amer, Phillip T. Conrad
December 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 4

Full text available: pdf(261.78 KB)   Additional Information: full citation, abstract, references, citings, index terms

Transport layer protocols provide for end-to-end communication between two or more hosts. This paper presents a tutorial on transport layer concepts and terminology, and a survey of transport layer services and protocols. The transport layer protocol TCP is used as a reference point, and compared and contrasted with nineteen other protocols designed over the past two decades. The service and protocol features of twelve of the most important protocols are summarized in both text and tables.< ...

Keywords: TCP/IP networks, congestion control, flow control, transport protocol, transport service

9 Optimizing throughout in a workstation-based network file system over a high bandwidth local area network
Theodore Faber
January 1998 **ACM SIGOPS Operating Systems Review**, Volume 32 Issue 1

Full text available: pdf(858.90 KB)   Additional Information: full citation, abstract, index terms

This paper describes methods of optimizing a client/server network file system to advantage of high bandwidth local area networks in a conventional distributed computing environment. The environment contains hardware that removes network and disk bandwidth bottlenecks. The remaining bottlenecks at clients include excessive context switching, inefficient data translation, and cumbersome data encapsulation methods. When these are removed, the null-write performance of a current implementation of S ...

10 Stateful distributed interposition
John Reumann, Kang G. Shin
February 2004 **ACM Transactions on Computer Systems (TOCS)**, Volume 22 Issue 1

Full text available: pdf(833.84 KB)   Additional Information: full citation, abstract, references, index terms

Interposition-based system enhancements for multitiered servers are difficult to build because important system context is typically lost at application and machine boundaries. For example, resource quotas and user identities do not propagate easily between cooperating services that execute on different hosts or that communicate with each other via intermediary services. Application-transparent system enhancement is difficult to achieve when such context information is obscured by complex servic ...

Keywords: Distributed computing, component services, distributed context, multitiered services, operating systems, server consolidation

11 <u>Analyzing communication latency using the Nectar communication processor</u>

Peter Steenkiste

October 1992 **ACM SIGCOMM Computer Communication Review , Conference proceedings on Communications architectures & protocols**, Volume 22 Issue 4

Full text available: pdf(1.16 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

For multicomputer applications, the most important performance parameters of a network is the latency for short messages. In this paper we present an analysis of communication latency using measurement of the Nectar system. Nectar is a high-performance multicomputer built around a high-bandwidth crosspoint network. Nodes are connected to the Nectar network using network coprocessors that are primarily responsible the protocol processing, but that can also execute application code. This arch ...

12 <u>Application-driven power management for mobile communication</u>

Robin Kravets, P. Krishnan

July 2000 **Wireless Networks**, Volume 6 Issue 4

Full text available: pdf(301.68 KB)   Additional Information: <u>full citation</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

13 <u>System support for pervasive applications</u>

Robert Grimm, Janet Davis, Eric Lemar, Adam Macbeth, Steven Swanson, Thomas Anderson, Brian Bershad, Gaetano Borriello, Steven Gribble, David Wetherall

November 2004 **ACM Transactions on Computer Systems (TOCS)**, Volume 22 Issue 4

Full text available: pdf(1.82 MB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>

Pervasive computing provides an attractive vision for the future of computing. Computational power will be available everywhere. Mobile and stationary devices will dynamically connect and coordinate to seamlessly help people in accomplishing their tasks. For this vision to become a reality, developers must build applications that constantly adapt to a highly dynamic computing environment. To make the developers' task feasible, we present a system architecture for pervasive computing, called & ...

Keywords: Asynchronous events, checkpointing, discovery, logic/operation pattern, migration, one.world, pervasive computing, structured I/O, tuples, ubiquitous computing

14 <u>Application performance in the QLinux multimedia operating system</u>

Vijay Sundaram, Abhishek Chandra, Pawan Goyal, Prashant Shenoy, Jasleen Sahni, Harrick Vin

October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Full text available: pdf(918.51 KB)   Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index terms</u>

In this paper, we argue that conventional operating systems need to be enhanced with predictable resource management mechanisms to meet the diverse performance requirements of emerging multimedia and web applications. We present QLinux—a multimedia operating system based on the Linux kernel that meets this requirement. QLinux employs hierarchical schedulers for fair, predictable allocation of processor, disk and network bandwidth, and accounting mechanisms for appropriate charging of ...

15 <u>Special issue on wireless extensions to the internet: Fast handovers and context transfers in mobile networks</u>

Rajeev Koodli, Charles E. Perkins

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